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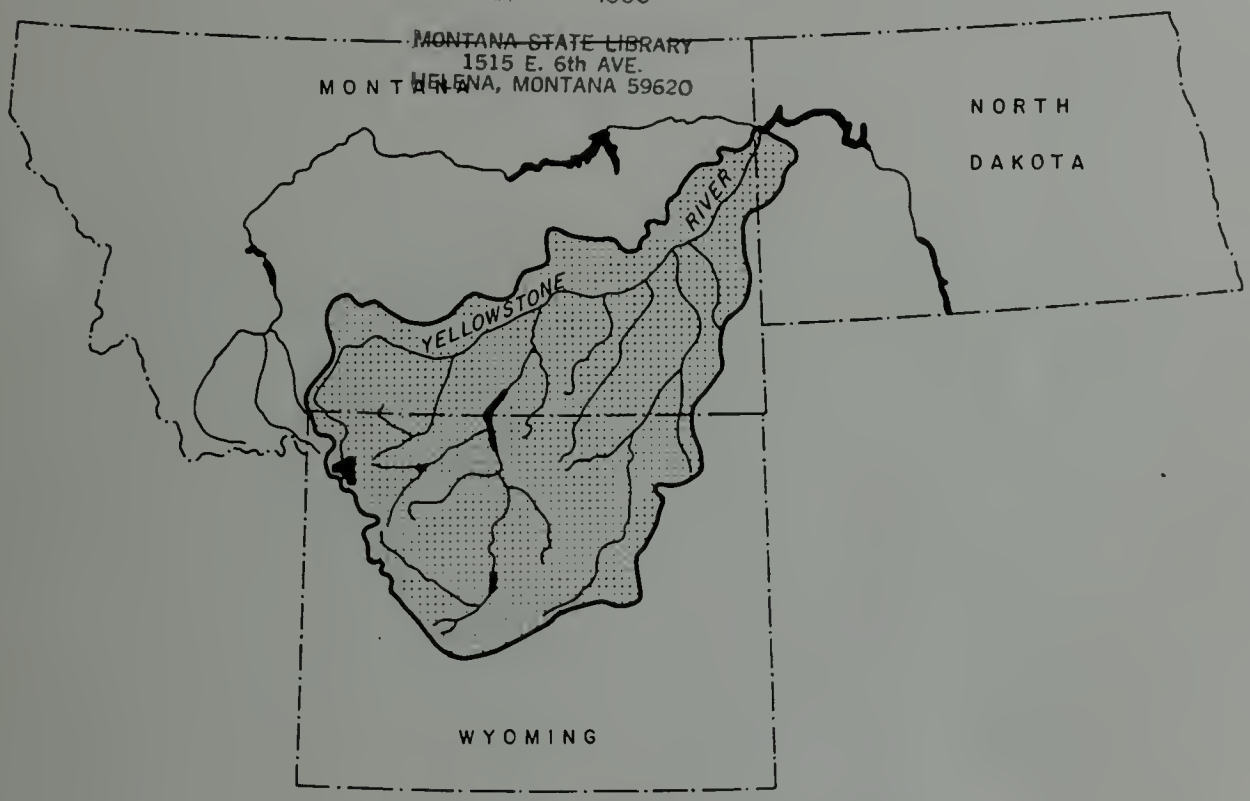

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YELLOWSTONE RIVER

COMPACT COMMISSION

FORTY-FOURTH ANNUAL REPORT

1995

YELLOWSTONE RIVER COMPACT COMMISSION
821 EAST INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58501

Honorable Jim Geringer
Governor of the State of Wyoming
Cheyenne, Wyoming 82002

Honorable Marc Racicot
Governor of the State of Montana
Helena, Montana 59620

Honorable Edward T. Schafer
Governor of the State of North Dakota
Bismarck, North Dakota 58501

Dear Sirs:

Pursuant to Article III of the Yellowstone River Compact (Compact), the Commission submits the following forty-fourth annual report of activities for the period ending September 30, 1995.

Members of the Yellowstone River Compact Commission convened their 44th Annual Meeting on November 29, 1995 at 8:05 a.m. in Cody, Wyoming. In attendance were Mr. William F. Horak, Chairman and Federal Representative, and Mr. Gary Fritz, Administrator, Water Resources Division, Montana Department of Natural Resources and Conservation. Mr. Gordon W. Fassett, Wyoming State Engineer, was unable to attend but was represented by Ms. Sue Lowry, Wyoming State Engineer's Office. Also in attendance were Mr. Keith Burron, Wyoming Attorney General's Office; Mr. Craig Cooper, Wyoming Board of Control, Water Division III; Mr. Robert Davis, U.S. Geological Survey; Mr. Don Englert, Wyoming Board of Control; Mr. Orrin Ferris, MSE-HKM Associates; Mr. Joe Moreland, U.S. Geological Survey; Mr. Marty Van Cleave, Montana Department of Natural Resources and Conservation, Billings Water Resources Office; and Mr. Mike Whitaker, Wyoming Board of Control, Water Division II.

Mr. Moreland presented information on budgets for current and future water years. He reported that the stream-gaging program for the Yellowstone River Compact Commission cost $46,900 in water year 1995. Budget estimates approved at the last meeting set costs for the 1996 program at $64,300. He noted that the increase in funding for 1996 covered the cost of relocating the Tongue River gage. He stated that the estimated cost for operation of gaging stations for 1997 would be $51,100, for 1998 would be $53,400, and for 1999 would be $55,700. He noted that estimated costs for future years had been decreased slightly to reflect lower anticipated rates of inflation. The Commission accepted the proposed budget for the coming year.

Mr. Moreland reported that 1995 runoff was 105 percent of average for the Clarks Fork Yellowstone River, 117 percent of average for the Bighorn River, 134 percent of average for the Tongue River, and 154 percent of average for the Powder River. He noted that flows in all tributaries were above average during June 1995. All reservoirs in the basin had more water in storage at the end of the 1995 water year than at the end of the previous water year.

Mr. Horak stated that the proposed "Rules for the Resolution of Disputes Over the Administration of the Yellowstone River Compact" (the draft dated June 20, 1995) had been reviewed by the U.S. Geological Survey (USGS). The only concern expressed by the USGS related to the language in

section VII of the draft rules. That section specifies the manner of funding the expenses of a facilitator that could be hired to help resolve an outstanding dispute between the representatives of Montana and Wyoming. Mr. Horak proposed that the words "and the USGS" be appended to the end of the sentence in section VII.A of the draft rules. When revised as proposed, section VII.A would state, "The USGS will pay one-half and the States of Montana and Wyoming shall each pay one-quarter of the expenses of the facilitator, which shall not exceed $10,000, unless agreed to by both States and the USGS." The Commission agreed to the modification.

Mr. Horak reported that he had discussed the procedure for adoption of the Proposed Rules for the Resolution of Disputes with the Department of the Interior Field Solicitor. The Solicitor stated that adoption of the rules did not require publication in the Federal Register. He recommended that Montana and Wyoming follow their Administrative Rules procedures in adopting the proposed Compact rules.

During the ensuing discussion, it was agreed that a process similar to the one that was used for adoption of the Rules for Adjudicating Water Rights on Interstate Ditches would be followed to formally adopt the proposed Rules for Resolution of Disputes. By early spring 1996, Montana will draft an announcement outlining the resolution process and guidelines for public inquiry. Wyoming will review the draft and the two States will agree on the wordage for this announcement to be published in local newspapers. The public announcements should be made concurrently in Montana and Wyoming, for a period of not less than three weeks. At the conclusion of the announcement period, an additional 30 days will be allowed for public comments. Finally, formal responses will be made by the States to whatever comments they receive. If substantive concerns are expressed, public hearings may be required. The meeting participants agreed, however, that public notice of the Commission's intent to adopt the proposed Rules for Resolution of Disputes will unlikely evoke great public concern.

The Commissioners agreed that the proposed rules need to be formally adopted by a vote of the Commission. They further agreed that it would not be necessary to call a special meeting of the Commission to consider adoption of the proposed rules. Action on the rule-adoption issue at the next (1996) annual Commission meeting will be timely enough. Mr. Fritz stated, and others agreed, that progress made by the Commission to adopt the Rules for Resolution of Disputes Over the Administration of the Yellowstone River Compact was a significant step forward.

Mr. Horak asked Wyoming to report on the Clarks Fork Wild and Scenic River issue. Ms. Lowry reported that a public hearing was held in Cody, Wyoming in October 1994. The Greater Yellowstone Coalition was supportive of the proposed Federal reserved water right. A Wyoming Water Development Commission storage facility is located below the Wild and Scenic segment. The Commission's remarks at the hearing acknowledged the boundary of the Wild and Scenic segment would allow for future water development. The application is now awaiting signature. The Clarks Fork Wild and Scenic designation will be the first such designation in Wyoming and the Federal reserved water right for the designated reach will be the first for the State. The priority date for the reservation will be 1990. The reserved water-right quantity during low-flow periods is identical to the Wyoming Game and Fish instream flow right. The Wild and Scenic instream flow right is a variable flow rate based on streamflow conditions and includes provisions for flushing flows. Mr. Fritz asked if any definitive flow rates were set in the reserved water right. Ms. Lowry stated that only the low-flow rate had a quantity figure defined and high-flow amounts are the total flow in the Clarks Fork. Other rates of flow were simply percentages of the streamflow. Ms. Lowry noted that

the U.S. Forest Service had been very helpful in providing hydrologic information.

Ms. Lowry reported on the current status of issues related to the Wind River Indian Reservation settlement. The major unresolved issue is delivery of water to Indian and non-Indian users. A team of specialists from the Federal, State, and tribal governments has been meeting to discuss rehabilitation of Indian water-delivery facilities and other concerns. Mr. Cooper noted that a Federal team joins the discussions about every two months but that local representatives meet more frequently. A Power subgroup of the negotiating team has been evaluating the potential for power generation from project reservoirs. Questions also have been raised about transfer of power revenues from Boysen Reservoir. Recreational issues are involved. The topic has generated considerable negative publicity. There are still unresolved issues concerning Walton Rights. The major discussions are currently focused on day-to-day operations.

Mr. Cooper stated that the team was lead by Mr. Duffey, a solicitor in the Department of Justice. He added that the Shoshone and Northern Arapahoe Tribes have offered to take over operation of Boysen Reservoir but no final decision has been made. The various subgroups of the negotiating team are making progress but no final reports have been completed. Mr. Cooper noted that 278 Walton claims have been filed and that each will be handled individually. The State's general adjudication staff is reporting information on each claim to the Special Masters. The Shoshone and Northern Arapahoe Tribes and the Department of Justice have filed objections to all of the staff reports submitted to date. If non-Indian claims are issued water rights, the claims will carry the same priority date as the Tribes' reserved rights.

Mr. Van Cleave noted the Walton Rights had been claimed on the Northern Cheyenne Indian Reservation in Montana. Mr. Fritz added that the Montana Federal Reserved Water Rights Compact Commission would face the issue in their negotiations with the Crow Indian Reservation.

Mr. Horak asked for an update on the Little Bighorn Energy Project. Ms. Lowry observed that pre-license paperwork had been filed with the Federal Energy Regulatory Commission but that the project no longer has an active full-time staff to pursue the proposal. The proposers have been asked to modify their water-right permit applications but no new requests have been received. An application has been filed for a State instream-flow right and Wyoming plans to process the request. Ms. Lowry indicated that the instream-flow right would have a priority date of 1989 or 1990. She observed that the Wyoming Game and Fish makes the determination of flow requirements and that the Wyoming Water Development Commission files the application.

Mr. Fritz reported on the Tongue River Reservoir Rehabilitation project. He stated that a draft Environmental Impact Statement has been prepared. Montana is currently searching for local sources of aggregate for the project. The project would provide for an increase of 20,000 acre-feet to satisfy water needs for the Northern Cheyenne Indian Reservation. He expressed hope that road construction would be started in the near future with water deliveries possible by the end of 1997 as required by the Compact with the Northern Cheyenne Indian Reservation.

Mr. Horak asked for an update on the Sheridan Area Water Supply/Twin Lakes Project. Ms. Lowry noted that problems in obtaining a 404 permit for the project had been largely resolved. The U.S. Army Corps of Engineers had rejected the original plan because of the potential loss of 23 acres of wetlands. A modified plan has reduced the impacted area to about 5 acres and the 404 permit should be issued in the near future. Wyoming plans to proceed with construction in 1996. The project is planned for completion in 1999. Although the project would increase the current storage capacity

by about 1,000 acre-feet, it is primarily intended to satisfy a requirement to serve treated water to the Sheridan area residents.

Ms. Lowry reported on the Buffalo Water Supply Project. A 404 permit will likely be issued soon for the 2,600 acre-foot Tie Hack Reservoir. The construction will be funded largely with Wyoming Water Development Commission money. When completed, the project will provide minimum flows in a dry reach of the channel and will include a hydropower plant. Mr. Whitaker added that a 6 cubic-feet-per-second transmission line will supply water to the hydropower plant.

Mr. Horak inquired about the status of the Greybull Valley Reservoir. Ms. Lowry explained that the project is a new off-channel storage facility that will store about 20,000 acre-feet of water. The facility will be used to reregulate discharge from the Sunshine Reservoirs at an off-channel site on Roach Gulch. Mr. Cooper stated that the priority date on the water rights for the project would be 1989, although most of the water to be diverted to the facility is water from the Sunshine Reservoirs that has a priority date of 1934. The primary purpose of the project is to regulate large fluctuations in discharge that result from drafting the Sunshine Reservoirs.

Ms. Lowry gave the Commission an overview of a Wyoming Water Center project. The Wyoming State Engineer's Office has requested that the Water Center undertake a project to update land-use data from the Water Planning Program reports. The Center has been developing land-use information using Geographical Information System technology. One thematic layer that would be of interest to the Commission is a post-1950 water-rights overlay. Division II has been mapped at 1:100,000. Parts of the Tongue River basin have been mapped at a scale of 1:24,000. Mr. Cooper added that the impetus for the project was a request from Mr. Dalby with the Montana Department of Natural Resources and Conservation for information on supplemental irrigation supplies.

Mr. Whitaker reported that Wyoming planned to issue a public notice for adjudicating a water-right permit on the Little Missouri River. Mr. Fritz commented that Montana would have no objection to the application.

Ms. Lowry asked about the status of the proposed New World Mine near Yellowstone National Park. Mr. Horak asked if Crown Butte Mines would be seeking a permit for a water right. Mr. Van Cleave reported that no requests have been received. Mr. Davis reported that the mining plan envisions an underground operation with an adit in the Fisher Creek drainage basin.

Mr. Fritz reported that the Montana Department of Natural Resources and Conservation is undergoing reorganization along with other Montana state agencies. A Department of Environmental Quality will be responsible for regulation and the new Department of Natural Resources and Conservation will have management responsibilities. The Water Resources Division will remain in the Department of Natural Resources and Conservation but will relocate to new office space.

Mr. Ferris reported that his firm is investigating water-rights claims related to the Crow Indian Reservation. The project will start with Pryor Creek and then address the Little Bighorn area.

Mr. Fritz noted that the Montana Federal Reserved Water Rights Commission is currently focusing on water-rights issues on the Rocky Boys Indian Reservation.

Mr. Horak noted that Mr. Moreland had accepted a position in the United Arab Emirates and would be replaced by Mr. Davis. Mr. Horak thanked Mr. Moreland for the excellent services he has

provided the Commission during the past decade as the USGS District Chief for Montana and as Secretary of the Commission. The Commissioners presented Mr. Moreland a plaque commemorating his valuable contributions to the Commission and wished him well in his new foreign assignment.

Having no other business to conduct, the Commission adjourned at 10:30 a.m.

Gordon W. Fassett
Commissioner for Wyoming

Gary Fritz
Commissioner for Montana

William F. Horak
Federal Representative

CONTENTS

	Page
Letter to Governors of signatory States	II
General report	1
Cost of operation and budget	1
Streamflow-gaging station operation	1
Diversions	2
Storage in reservoirs	2
Reservoirs completed after January 1, 1950	2
Reservoirs existing on January 1, 1950	2
Summary of discharge for Compact streamflow-gaging stations	3
Clarks Fork Yellowstone River at Edgar, Mont.	3
Little Bighorn River near Hardin, Mont.	5
Bighorn River above Tullock Creek, near Bighorn, Mont.	6
Tongue River at Miles City, Mont.	9
Powder River near Locate, Mont.	11
Monthly summary of contents for Compact reservoirs completed after January 1, 1950	13
Boysen Reservoir, Wyo.	13
Anchor Reservoir, Wyo.	14
Bighorn Lake near St. Xavier, Mont.	15
Monthly summary of contents for Compact reservoirs existing on January 1, 1950	16
Rules and regulations for administration of the Yellowstone River Compact	17
Rules for adjudicating water rights on interstate ditches	21
Claim form for interstate ditches	26
Conversion table	30

ILLUSTRATIONS

Plate 1.	Map showing locations of Compact streamflow-gaging and reservoir-content stations	31
Figures 1-4.	Graphs showing comparison of discharge during water year 1995 with discharge during water year 1994 and with 10-year and 30-year average discharges for:	
	1. Clarks Fork Yellowstone River at Edgar, Mont.	4
	2. Bighorn River above Tullock Creek, near Bighorn, Mont.	8
	3. Tongue River at Miles City, Mont.	10
	4. Powder River near Locate, Mont.	12

GENERAL REPORT

Cost of operation and budget

The work funded by the Yellowstone River Compact Commission, which to date has been primarily concerned with the collection of required hydrologic data, has been financed through cooperative arrangements whereby Montana and Wyoming each bear one-fourth of the cost and the remaining one-half is borne by the United States. The salaries and necessary expenses of the State and U.S. Geological Survey representatives, and the cost to other agencies of collecting hydrologic data, are not considered as expenses of the Commission.

The expense of the Commission during fiscal year 1995 was $46,900, in accordance with the budget adopted for the year.

The budgets for fiscal years 1996, 1997, 1998, and 1999 were tentatively adopted subject to the availability of appropriations.

The budgets for the five fiscal years are summarized as follows:

October 1, 1994, to September 30, 1995 (fiscal year 1995):	
Continuation of existing stream-gaging programs	$46,900
October 1, 1995, to September 30, 1996 (fiscal year 1996):	
Continuation of existing stream-gaging programs and relocation of Tongue River gage	$64,300
October 1, 1996, to September 30, 1997 (fiscal year 1997):	
Estimate of continuation of existing stream-gaging progams	$51,100
October 1, 1997, to September 30, 1998 (fiscal year 1998):	
Estimate of continuation of existing stream-gaging programs	$53,400
October 1, 1998, to September 30, 1999 (fiscal year 1999):	
Estimate of continuation of existing stream-gaging programs	$55,700

Streamflow-gaging station operation

Gaging stations at the measuring sites specified in the Yellowstone River Compact were continued in operation and satisfactory discharge records were collected at each station. Locations of streamflow-gaging and reservoir stations are shown on a map of the Yellowstone River Basin at the end of the report.

During water year 1995, annual streamflow was greater than normal[1] in two of the four tributaries of the Yellowstone River as given in the following table:

Station number	Measurement site	Percent of average
06208500	Clarks Fork Yellowstone River at Edgar, Mont., minus diversions to White Horse Canal	105
06294500	Bighorn River above Tullock Creek, near Bighorn, Mont., minus Little Bighorn River near Hardin, Mont. Adjusted for change in contents in Bighorn Lake	117
06308500	Tongue River at Miles City, Mont.	134
06326500	Powder River near Locate, Mont.	154

[1]The "normal" range is 80 to 120 percent of average.

Tabulation of streamflow data for water year 1995 and graphical comparisons with average flows for the preceding year and for selected base periods are given in the section "Summary of discharge for Compact streamflow-gaging stations."

Diversions

No diversions were regulated by the Commission during the year. The Commissioners considered the need to develop procedures to administer water in accordance with the provisions of the Compact.

Storage in reservoirs

Reservoirs completed after January 1, 1950

Bighorn Lake, a Bureau of Reclamation project on the Bighorn River, and the largest storage project in the basin, contained 775,100 acre-feet at the beginning of the year and 1,014,000 acre-feet at the end of the year. Daily contents ranged from 775,600 acre-feet on October 1, 1994, to 1,140,000 acre-feet on July 17, 1995. Boysen Reservoir, located on the Wind River and operated by the Bureau of Reclamation, began the year with 444,200 acre-feet in storage and ended the year with 610,600 acre-feet. Storage figures are listed as usable contents, in acre-feet. Monthend and year end contents and a description of these reservoirs are given in the section "Monthly summary of contents for Compact reservoirs completed after January 1, 1950." The Commission is cognizant of other reservoirs in the Yellowstone River basin and considers their aggregate effect to be insufficient to warrant the collection of storage data at this time.

Reservoirs existing on January 1, 1950

As a matter of record and general information, monthend contents are given later in the report for reservoirs in existence upstream from the points of measurement on January 1, 1950. These data are pertinent to allocation under Article V, Section C, Item 3 of the Compact.

SUMMARY OF DISCHARGE FOR COMPACT STREAMFLOW-GAGING STATIONS

06208500 Clarks Fork Yellowstone River at Edgar, Mont.

LOCATION.--Lat 45°27'58", long 108°50'35", in $SE^1/_4SE^1/_4SE^1/_4$ sec.23, T.4 S., R.23 E., Carbon County, Hydrologic Unit 10070006, on right bank 400 ft downstream from county bridge, 0.5 mi east of Edgar, 6 mi upstream from Rock Creek, and at river mile 22.1.

DRAINAGE AREA.--2,032 mi^2.

PERIOD OF RECORD.--July 1921 to September 1969, October 1986 to current year.

REVISED RECORDS.--WSP 1509: 1924, 1932(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,460 ft above sea level, from topographic map. Prior to Aug. 31, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for the estimated daily discharges, which are poor. Diversions for irrigation of about 41,500 acres, of which about 840 acres lies downstream from the station. In addition, about 6,300 acres of land upstream from the station are irrigated by diversions from the adjoining Rock Creek basin. Several observations of water temperature and specific conductance were made during the year. Figures of discharge given herein have the flow of White Horse Canal subtracted.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1994 TO SEPTEMBER 1995
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	299	477	441	e210	e400	e240	330	487	3020	3470	1370	277
2	311	523	491	e210	e400	e200	325	453	3580	3560	1100	277
3	332	514	446	e190	e380	e220	326	425	4170	3920	917	279
4	425	469	e360	e190	e360	e240	337	453	4960	4300	861	273
5	462	419	e340	e200	e330	e240	350	464	5020	3960	874	278
6	545	464	e310	e190	e330	e220	410	496	6210	3760	873	285
7	620	518	e320	e220	e330	e260	447	684	7810	4000	837	304
8	602	501	e320	e250	e330	e300	494	776	5200	4440	806	327
9	554	481	e320	e300	e330	e350	503	845	4090	4590	894	476
10	522	428	e320	e390	e300	e450	463	828	3370	4380	846	632
11	503	512	e330	e390	e250	455	411	909	2900	4360	766	611
12	487	504	e330	e390	e210	514	387	1400	3260	4410	711	530
13	484	518	e330	e400	e180	510	379	1590	4680	3980	647	492
14	488	490	e320	e410	e190	437	392	1450	6470	3460	608	447
15	519	428	e320	e400	e210	381	490	1320	7590	2970	502	418
16	660	389	e300	e350	e240	397	487	1650	7430	2590	404	416
17	802	461	e300	e320	e280	412	442	2200	6780	2310	367	431
18	689	458	e300	e280	e330	392	420	2320	6040	2150	375	448
19	660	462	e310	e300	e400	376	409	2430	5070	2130	404	476
20	620	458	e310	e300	e500	380	404	2490	4360	2220	417	610
21	597	457	e290	e280	e410	374	402	2590	3790	2240	367	669
22	577	453	e290	e280	422	372	424	2660	3650	2230	291	678
23	569	384	e300	e280	383	371	420	2430	3370	2210	240	678
24	553	444	e310	e280	366	362	420	2040	3010	2010	220	631
25	550	450	410	e300	361	359	435	1890	3170	1820	247	610
26	533	461	436	e320	363	342	451	1720	3710	1670	309	573
27	513	448	408	e350	373	331	415	1540	4450	1570	489	548
28	500	410	394	e350	e300	323	393	1420	5180	1510	463	511
29	520	375	388	e330	---	322	428	1400	4940	1510	401	504
30	517	384	376	e330	---	316	493	1740	3870	1530	339	541
31	492	---	e270	e370	---	310	---	2300	---	1500	294	---
TOTAL	16505	13740	10690	9360	9258	10756	12487	45400	141150	90760	18239	14230
MEAN	532	458	345	302	331	347	416	1465	4705	2928	588	474
MAX	802	523	491	410	500	514	503	2660	7810	4590	1370	678
MIN	299	375	270	190	180	200	325	425	2900	1500	220	273
AC-FT	32740	27250	21200	18570	18360	21330	24770	90050	280000	180000	36180	28230

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1995, BY WATER YEAR (WY)*

MEAN	529	498	403	346	347	363	559	2101	4009	2020	613	482
MAX	1010	777	583	471	584	554	1398	5578	6843	4771	1541	1395
(WY)	1942	1928	1951	1951	1963	1943	1943	1928	1927	1943	1951	1941
MIN	298	310	217	200	180	220	123	757	1768	290	49.5	156
(WY)	1956	1936	1937	1922	1922	1924	1961	1968	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 1994 CALENDAR YEAR		FOR 1995 WATER YEAR		WATER YEARS 1921 - 1995*	
ANNUAL TOTAL	260503		392575			
ANNUAL MEAN	714		1076		1024	
HIGHEST ANNUAL MEAN					1558	1943
LOWEST ANNUAL MEAN					668	1988
HIGHEST DAILY MEAN	4960	May 14	7810	Jun 7	10600	Jun 2 1936
LOWEST DAILY MEAN	103	Sep 9	180	Feb 13	37	May 11 1961
ANNUAL SEVEN-DAY MINIMUM	113	Sep 7	201	Jan 1	43	Apr 18 1961
INSTANTANEOUS PEAK FLOW			8900	Jun 7	a10900	Jun 2 1936
INSTANTANEOUS PEAK STAGE			8.44	Jun 7	8.66	Jun 6 1991
INSTANTANEOUS LOW FLOW					36	Apr 22 1961
ANNUAL RUNOFF (AC-FT)	516700		778700		741800	
10 PERCENT EXCEEDS	1950		3460		2820	
50 PERCENT EXCEEDS	366		451		465	
90 PERCENT EXCEEDS	185		283		270	

*--During period of operation (water years 1921-69, 1987 to current year).
a--Gage height, 8.62 ft.
e--Estimated.

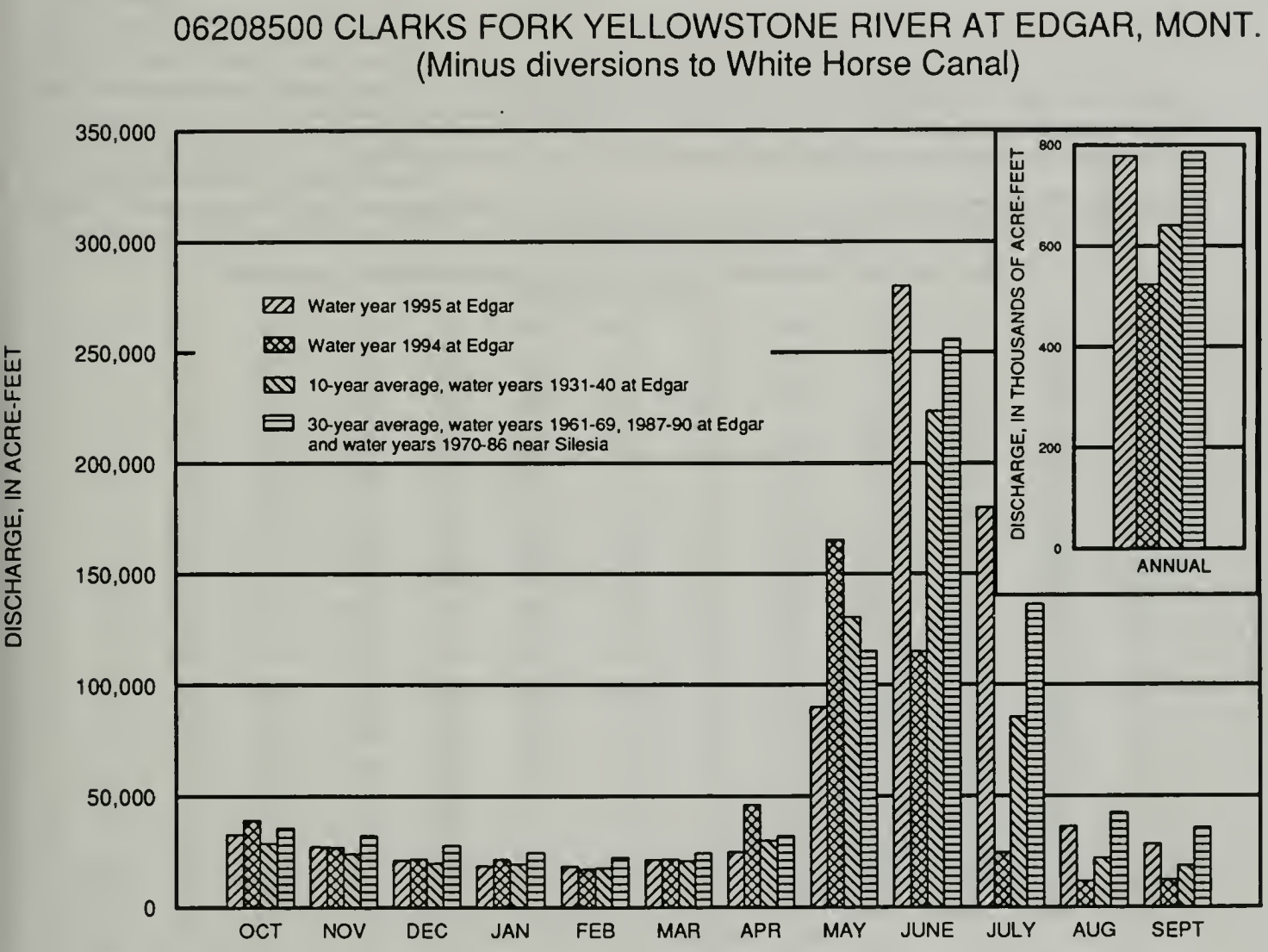


Figure 1. Comparison of discharge of the Clarks Fork Yellowstone River during water year 1995 with discharge during water year 1994 and with 10-year and 30-year average discharges.

06294000 Little Bighorn River near Hardin, Mont.

LOCATION.--Lat 45°44'09", long 107°33'24", in $SE^1/_4NE^1/_4NE^1/_4$ sec.19, T.1 S., R.34 E., Big Horn County, Hydrologic Unit 10080016, on left bank 50 ft downstream from bridge on Sarpy Road, 0.2 mi upstream of terminal wasteway of Agency Canal, 0.6 mi upstream from mouth, and 2.3 mi east of Hardin.

DRAINAGE AREA.--1,294 mi^2.

PERIOD OF RECORD.--June 1953 to current year.

REVISED RECORDS.--WDR MT-86-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 2,882.29 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Oct. 7, 1953, nonrecording gage at site 0.4 mi downstream. Oct. 7, 1953, to May 6, 1963, water-stage recorder at site 0.3 mi downstream. May 6, 1963, to Nov. 6, 1963, nonrecording gage at site 0.4 mi downstream. All at different datums. Nov. 7, 1963, to Aug. 15, 1976, water-stage recorder at site 35 ft downstream at present datum. Aug. 15, 1976, to Sept. 30, 1979, water-stage recorders were located on each bank downstream of Sarpy Road bridge and were used depending on control conditions.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow partly regulated by Willow Creek Reservoir (capacity 23,000 acre-ft). Diversions for irrigation of 20,980 acres upstream from station. Figures of discharge given herein include flow of terminal wasteway of Agency Canal.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1994 TO SEPTEMBER 1995
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	154	e150	e130	e290	e70	151	364	539	647	195	127
2	112	153	e160	e90	e450	e70	150	555	587	585	187	136
3	116	155	e120	e70	e600	e70	147	442	650	549	172	164
4	129	155	e80	e60	e500	e75	145	384	794	553	168	162
5	153	154	e90	e65	e450	e75	144	305	976	585	154	156
6	157	148	e90	e70	e400	e55	148	259	1120	554	144	143
7	171	150	e100	e80	e350	e60	150	238	1290	541	142	158
8	213	151	e100	e90	e250	e80	158	229	1600	521	156	174
9	202	151	e100	e100	e200	e100	177	255	1630	509	134	187
10	179	148	e90	e120	e150	e130	189	943	1450	491	115	204
11	167	145	e90	e150	e120	237	188	2090	1250	456	120	223
12	178	145	e110	e170	e90	331	177	1950	1050	421	120	223
13	155	149	e130	e200	e70	420	175	1340	949	410	138	185
14	148	154	e150	e220	e60	410	186	1840	1060	390	142	174
15	150	162	e180	e230	e70	307	186	1530	1300	367	143	169
16	203	156	e200	e220	e80	236	179	1870	1510	350	153	179
17	263	143	e210	e200	e100	236	172	1650	1710	335	147	184
18	295	120	224	e180	e130	267	167	1050	1900	290	130	187
19	310	90	231	e170	e200	258	162	898	1960	258	135	186
20	278	100	234	e150	e250	213	158	871	1750	260	149	195
21	227	120	219	e130	e240	190	153	847	1470	263	151	220
22	197	140	221	e110	e220	181	153	771	1330	275	140	235
23	183	150	222	e90	e210	177	155	740	1240	289	134	229
24	173	150	198	e80	e210	183	156	688	1140	284	140	217
25	164	170	189	e70	e210	204	156	604	991	281	146	215
26	160	180	192	e70	e180	195	157	571	875	269	145	210
27	159	180	187	e80	e90	173	179	537	808	252	175	207
28	159	170	179	e90	e80	162	194	528	754	241	175	192
29	162	150	175	e120	---	159	204	540	738	229	148	186
30	161	e150	172	e170	---	153	246	521	713	219	132	190
31	160	---	e140	e270	---	150	---	518	---	206	125	---
TOTAL	5585	4443	4933	4045	6250	5627	5062	25928	35134	11880	4555	5617
MEAN	180	148	159	130	223	182	169	836	1171	383	147	187
MAX	310	180	234	270	600	420	246	2090	1960	647	195	235
MIN	101	90	80	60	60	55	144	229	539	206	115	127
AC-FT	11080	8810	9780	8020	12400	11160	10040	51430	69690	23560	9030	11140

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1995, BY WATER YEAR (WY)

MEAN	156	155	137	145	214	333	327	638	852	282	123	134
MAX	276	248	223	366	610	987	748	2852	1981	1333	382	267
(WY)	1979	1979	1979	1975	1971	1972	1965	1978	1968	1975	1975	1978
MIN	67.6	84.6	68.7	71.6	70.3	92.7	54.8	71.9	117	8.50	2.46	19.1
(WY)	1957	1986	1962	1988	1989	1961	1961	1961	1961	1961	1961	1960

SUMMARY STATISTICS	FOR 1994 CALENDAR YEAR		FOR 1995 WATER YEAR		WATER YEARS 1954 - 1995	
ANNUAL TOTAL	89679		119059			
ANNUAL MEAN	246		326		291	
HIGHEST ANNUAL MEAN					676	1975
LOWEST ANNUAL MEAN					70.4	1961
HIGHEST DAILY MEAN	1230	May 15	2090	May 11	15800	May 20 1978
LOWEST DAILY MEAN	52	Aug 10	55	Mar 6	.30	Aug 5 1961
ANNUAL SEVEN-DAY MINIMUM	55	Aug 10	68	Mar 1	.40	Aug 3 1961
INSTANTANEOUS PEAK FLOW			a2570	May 12	c22600	May 19 1978
INSTANTANEOUS PEAK STAGE			b6.41	Feb 4	d11.78	Mar 20 1960
INSTANTANEOUS LOW FLOW					f.20	Aug 7 1961
ANNUAL RUNOFF (AC-FT)	177900		236200		210900	
10 PERCENT EXCEEDS	529		780		637	
50 PERCENT EXCEEDS	155		180		168	
90 PERCENT EXCEEDS	90		100		79	

a--Gage height, 5.86 ft.
b--Backwater from ice.
c--Gage height, 11.20 ft.
d--Site and datum then in use, backwater from ice.
e--Estimated.
f--Result of discharge measurement.

06294500 Bighorn River above Tullock Creek, near Bighorn, Mont.

LOCATION.--Lat 46°07'29", long 107°28'06", in $SE^1/_4SE^1/_4NE^1/_4$ sec.3, T.4 N., R.34 E., Treasure County, Hydrologic Unit 10080015, on right bank, 1.9 mi upstream from Tullock Creek, 3.6 mi southwest of Bighorn, 4.5 mi southeast of Custer, and at river mile 3.0.

DRAINAGE AREA.--22,414 mi^2. Area at site used Oct. 7, 1955, to Sept. 30, 1981, 22,885 mi^2.

PERIOD OF RECORD.--October 1981 to current year. Previously published as "06294700 Bighorn River at Bighorn, MT" 1956-81, and as "near Custer" 1945-55. Flows are equivalent at all sites.

GAGE.--Water-stage recorder. Elevation of gage is 2,700 ft above sea level, from topographic map. May 11, 1945 to Dec. 6, 1945, nonrecording gage, and Dec. 7, 1945, to Oct. 6, 1955, water-stage recorder 1.7 mi upstream at different datum. Oct. 7, 1955, to Sept. 30, 1981, at site 2.3 mi downstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Bighorn Lake beginning November 1965 (usable capacity, 1,356,000 acre-ft). Major regulation prior to November 1965 by 14 reservoirs in Wyoming and 1 in Montana with combined usable capacity of about 1,400,000 acre-ft. Diversion for irrigation of about 445,200 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1994 TO SEPTEMBER 1995
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1810	1720	1750	e2100	2320	2180	1980	2490	5920	9910	7270	2990
2	1770	1700	1810	e2000	2480	2260	1990	2910	5970	9790	6000	3030
3	1770	1670	1990	e2000	2590	2320	2000	2840	6080	9650	5250	3050
4	1730	1670	1950	e2000	2810	2240	1990	2560	6160	9620	4510	3030
5	1710	1680	e1800	2000	2670	2220	1960	2300	6390	9760	4120	3000
6	1750	1680	e1800	e2000	2460	2150	1930	2200	6810	9680	4060	3060
7	1800	1680	e1900	e2000	2250	2220	1940	2150	7960	9630	3980	3060
8	1780	1680	2000	e2000	2180	2320	1950	2080	9350	9520	3940	3060
9	1770	1670	2010	2010	2160	2160	2020	2260	9930	9450	3910	3180
10	1730	1670	1970	2000	2110	1970	2020	3980	10600	9380	3880	3530
11	1680	1670	e1900	2000	e2100	2140	2030	5360	10500	10400	3870	3620
12	1670	1670	1970	1930	e2100	2270	2050	5790	10200	12200	3850	3680
13	1610	1700	1980	1960	e2100	2510	2040	9380	9900	13200	3840	4150
14	1570	1690	1990	1990	e2000	2420	2010	10900	9790	13800	3770	4660
15	1530	1690	2030	2000	e1900	2280	2010	11000	10100	13700	3760	5100
16	1790	1680	2060	2010	e1900	2170	1980	10800	10300	15000	3680	5030
17	2230	1690	2090	2010	e1900	2160	1980	9760	10300	15100	3650	5140
18	2190	1700	2100	2000	e2000	2190	1950	9080	10400	15000	3630	5150
19	2080	1620	2140	2020	e2100	2150	1940	8640	10400	14900	3580	5190
20	1370	1600	2150	2020	2180	2090	1940	8490	10200	14900	3570	5250
21	1880	1640	2170	2050	2200	2040	1930	8410	9990	14500	3500	5330
22	1810	1650	2190	2050	2220	2060	1950	8240	9860	13600	3360	5400
23	1770	1640	2180	2040	2190	2050	1950	7900	9740	13200	3270	5440
24	1760	1680	2200	2050	2200	2060	1950	7260	9710	13200	3240	5450
25	1750	1680	2220	2040	2230	2200	1930	6260	9590	12900	3200	5470
26	1730	1700	2220	2060	2240	2210	1960	6110	9460	12300	3200	5510
27	1740	1720	2260	2110	2200	2100	2040	6060	9410	12200	3190	5510
28	1750	1690	2250	2170	2160	2060	2070	6050	9780	11000	3180	5530
29	1750	1690	2270	2190	---	2010	2040	6070	9980	9160	3100	5330
30	1720	1720	2270	2210	---	1990	2160	6000	9950	8650	3050	4970
31	1730	---	2280	2240	---	1970	---	5920	---	8530	3030	---
TOTAL	54730	50340	63900	63260	61950	67170	59690	189250	274730	363830	119440	131900
MEAN	1765	1678	2061	2041	2212	2167	1990	6105	9158	11740	3853	4397
MAX	2230	1720	2280	2240	2810	2510	2160	11000	10600	15100	7270	5530
MIN	1370	1600	1750	1930	1900	1970	1930	2080	5920	8530	3030	2990
AC-FT	108600	99850	126700	125500	122900	133200	118400	375400	544900	721700	236900	261600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1995, BY WATER YEAR (WY)

MEAN	3223	3350	3180	3035	3177	3696	3429	4400	7028	5387	2767	2814
MAX	5546	5599	4907	5478	5314	6580	7203	9102	15180	19090	6567	4952
(WY)	1972	1974	1968	1968	1971	1972	1972	1947	1948	1967	1978	1973
MIN	1391	1223	1280	1382	1843	908	1063	1304	1050	707	868	1009
(WY)	1990	1978	1961	1961	1966	1966	1966	1966	1966	1960	1961	1966

SUMMARY STATISTICS	FOR 1994 CALENDAR YEAR		FOR 1995 WATER YEAR		WATER YEARS 1946 - 1995	
ANNUAL TOTAL	935480		1500190			
ANNUAL MEAN	2563		4110		3791	
HIGHEST ANNUAL MEAN					5501	1947
LOWEST ANNUAL MEAN					1623	1961
HIGHEST DAILY MEAN	6050	Jun 3	15100	Jul 17	50000	May 20 1978
LOWEST DAILY MEAN	1370	Oct 20	1370	Oct 20	400	Apr 4 1967
ANNUAL SEVEN-DAY MINIMUM	1560	Sep 23	1640	Nov 19	528	May 6 1961
INSTANTANEOUS PEAK FLOW			15300	Jul 17	a59200	May 20 1978
INSTANTANEOUS PEAK STAGE			7.17	Jul 17	b14.21	Apr 2 1965
INSTANTANEOUS LOW FLOW					c275	Nov 15 1959
ANNUAL RUNOFF (AC-FT)	1856000		2976000		2746000	
10 PERCENT EXCEEDS	3740		9880		6200	
50 PERCENT EXCEEDS	2280		2200		3180	
90 PERCENT EXCEEDS	1680		1720		1800	

SUMMARY STATISTICS	WATER YEARS 1946 - 1961*		WATER YEARS 1967 - 1995**	
ANNUAL MEAN	3358		3882	
HIGHEST ANNUAL MEAN	5501	1947	5415	1975
LOWEST ANNUAL MEAN	1623	1961	1999	1989
HIGHEST DAILY MEAN	25700	Jun 23 1947	50000	May 20 1978
LOWEST DAILY MEAN	462	May 12 1961	400	Apr 4 1967
ANNUAL SEVEN-DAY MINIMUM	528	May 6 1961	843	Nov 18 1977
INSTANTANEOUS PEAK FLOW	d26200	Jun 24 1947	59200	May 20 1978
INSTANTANEOUS PEAK STAGE	b10.65	Mar 20 1947	14.15	May 20 1978
INSTANTANEOUS LOW FLOW	c275	Nov 15 1959		
ANNUAL RUNOFF (AC-FT)	2578000		2812000	
10 PERCENT EXCEEDS	6200		6130	
50 PERCENT EXCEEDS	2810		3430	
90 PERCENT EXCEEDS	1500		1990	

*--Prior to construction of Yellowtail Dam.
**--After completion of Yellowtail Dam.
a--Gage height 14.15 ft.
b--Backwater from ice.
c--About, result of freezeup.
d--Gage height, 8.79 ft, at different site and datum.
e--Estimated.

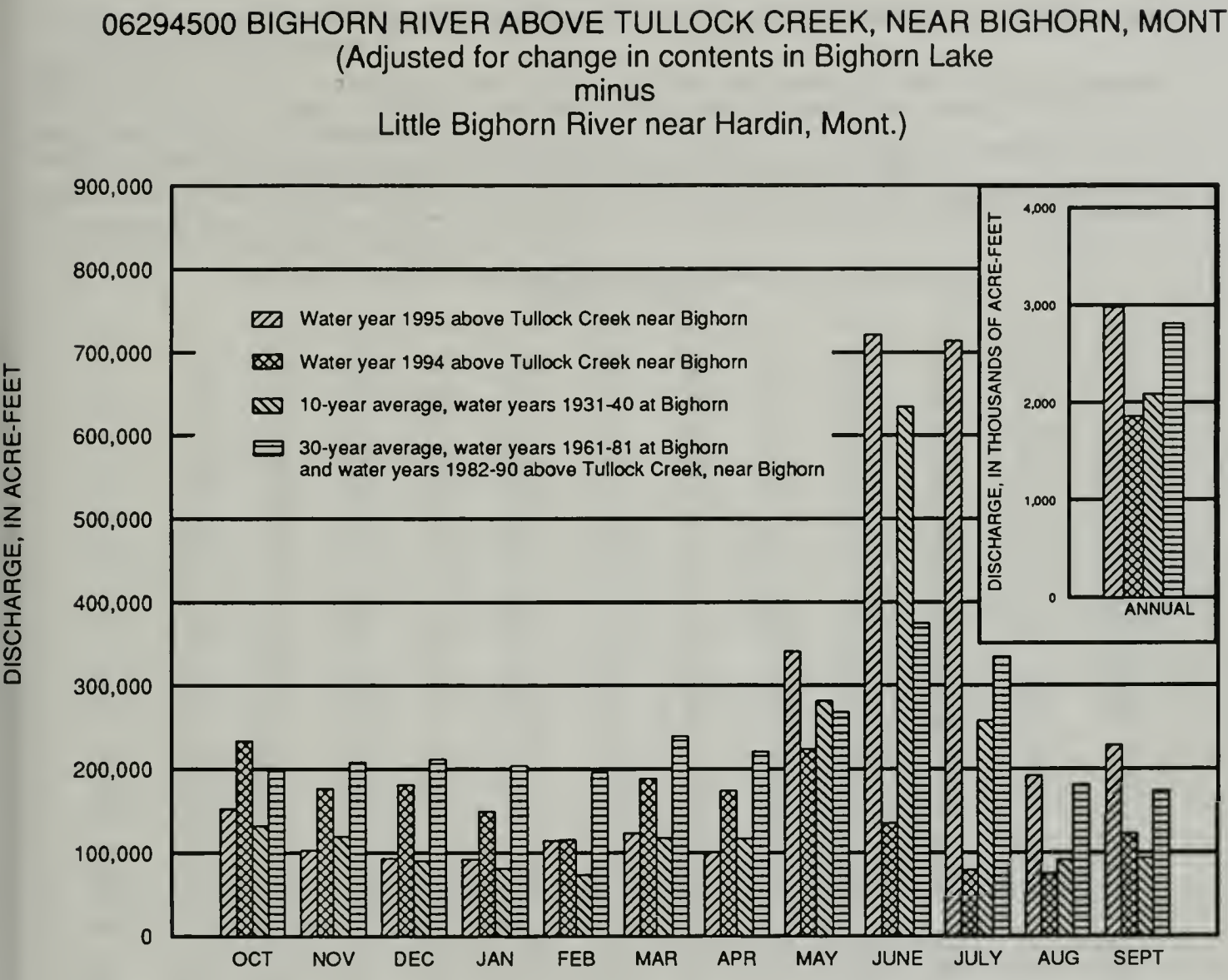


Figure 2. Comparison of discharge of the Bighorn River during water year 1995 with discharge during water year 1994 and with 10-year and 30-year average discharges.

06308500 Tongue River at Miles City, Mont.

LOCATION.--Lat 46°20'44", long 105°48'10", in NE¼NE¼SE¼ sec.23, T.7 N., R.47 E., Custer County, Hydrologic Unit 10090102, on right bank 4 mi south of Miles City and at river mile 8.1.

DRAINAGE AREA.--5,379 mi^2.

PERIOD OF RECORD.--April 1938 to April 1942, April 1946 to current year. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to October 1932. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,375.76 ft above sea level (levels by U.S. Army Corps of Engineers). April 1938 to April 1942, nonrecording gage at site 8 mi upstream at different datum. April 1946 to Sept. 30, 1963, at datum 1.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulation by Tongue River Reservoir (station 06307000), and many small reservoirs in Wyoming (combined capacity about 15,000 acre-ft). Diversions for irrigation of about 100,800 acres upstream from station. U. S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1994 TO SEPTEMBER 1995
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	117	e280	e160	e250	e120	337	243	1520	2220	236	188
2	55	117	e250	e160	e230	e130	336	247	1520	2220	230	185
3	53	186	e200	e140	e220	e130	330	255	1520	2210	217	176
4	53	195	e170	e120	e210	e120	329	251	1770	2220	203	168
5	53	179	e150	e130	e190	e110	329	244	1880	2240	210	165
6	64	201	e170	e140	e180	e90	329	237	2110	2170	201	172
7	127	198	e190	e130	e150	e110	330	230	2240	1890	189	187
8	134	198	e180	e140	e170	e120	345	228	2270	1740	204	208
9	132	195	e190	e150	e180	e150	378	318	2350	1740	184	208
10	135	192	e170	e170	e160	e300	366	525	2490	1730	164	208
11	123	198	e180	e160	e140	e500	369	294	2530	1650	168	210
12	123	201	e190	e150	e120	e1000	452	615	2500	1680	149	212
13	123	206	e180	e140	e120	e1500	646	2400	2270	1680	130	215
14	123	208	e170	e150	e120	932	524	2930	1990	1700	135	219
15	124	200	e170	e150	e130	764	414	2160	1850	1700	152	208
16	136	204	e180	e140	e150	538	362	2000	1700	1680	136	210
17	159	201	e180	e150	e170	472	341	1890	1680	1660	99	214
18	194	e190	e190	e140	e190	382	330	1850	1890	1410	96	214
19	201	e180	e190	e160	e230	352	329	1840	2390	1040	145	224
20	175	e220	e200	e150	e260	332	329	1850	2670	848	133	234
21	157	e210	e220	e140	e300	317	332	1940	2740	619	137	247
22	136	e220	e220	e140	e280	306	328	1650	2810	479	124	265
23	133	e240	e210	e160	e260	294	325	1570	2830	430	109	266
24	121	e260	e220	e170	e260	287	331	1550	2850	401	156	261
25	117	e250	e230	e170	e280	279	331	1560	2860	366	143	255
26	117	e240	e240	e180	e250	307	303	1580	2870	333	144	259
27	117	e240	e230	e180	e200	337	259	1600	2880	318	193	259
28	117	e240	e220	e170	e150	343	237	1590	2500	294	224	259
29	118	e240	e200	e180	---	341	228	1560	1970	276	204	254
30	117	e270	e170	e200	---	337	219	1540	2090	264	167	254
31	117	---	e160	e230	---	335	---	1530	---	256	168	---
TOTAL	3708	6196	6100	4850	5550	11635	10398	38277	67540	39464	5150	6604
MEAN	120	207	197	156	198	375	347	1235	2251	1273	166	220
MAX	201	270	280	230	300	1500	646	2930	2880	2240	236	266
MIN	53	117	150	120	120	90	219	228	1520	256	96	165
AC-FT	7350	12290	12100	9620	11010	23080	20620	75920	134000	78280	10220	13100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1995, BY WATER YEAR (WY)*

MEAN	243	259	197	196	275	556	451	729	1309	490	182	201
MAX	694	585	423	502	1794	1783	1693	2983	3825	2207	700	599
(WY)	1972	1942	1950	1975	1971	1971	1965	1978	1978	1975	1975	1968
MIN	10.3	60.9	68.0	78.6	102	79.8	12.5	29.2	48.6	12.6	6.08	2.40
(WY)	1961	1989	1990	1961	1961	1961	1961	1961	1960	1960	1949	1938

SUMMARY STATISTICS	FOR 1994 CALENDAR YEAR		FOR 1995 WATER YEAR		WATER YEARS 1938 - 1995*	
ANNUAL TOTAL	123357		205472			
ANNUAL MEAN	338		563		421	
HIGHEST ANNUAL MEAN					986	1978
LOWEST ANNUAL MEAN					57.2	1961
HIGHEST DAILY MEAN	8500	Mar 4	2930	May 14	9290	Jun 15 1962
LOWEST DAILY MEAN	10	Aug 10	53	Oct 3	.00	Jul 9 1940
ANNUAL SEVEN-DAY MINIMUM	12	Aug 5	66	Oct 1	.00	Jul 9 1940
INSTANTANEOUS PEAK FLOW			3270	May 14	a13300	Jun 15 1962
INSTANTANEOUS PEAK STAGE			6.95	May 14	b13.27	Mar 19 1960
INSTANTANEOUS LOW FLOW					c.00	Jul 9 1940
ANNUAL RUNOFF (AC-FT)	244700		407600		304900	
10 PERCENT EXCEEDS	568		1860		984	
50 PERCENT EXCEEDS	180		220		230	
90 PERCENT EXCEEDS	22		129		70	

*--During period of operation (April 1938 to April 1942, April 1946 to current year).
a--Gage height, 12.33 ft, from rating curve extended above 8,200 ft^3/s on basis of float measurement.
b--Ice jam.
c--Also occurred on several other days in 1940.
e--Estimated.

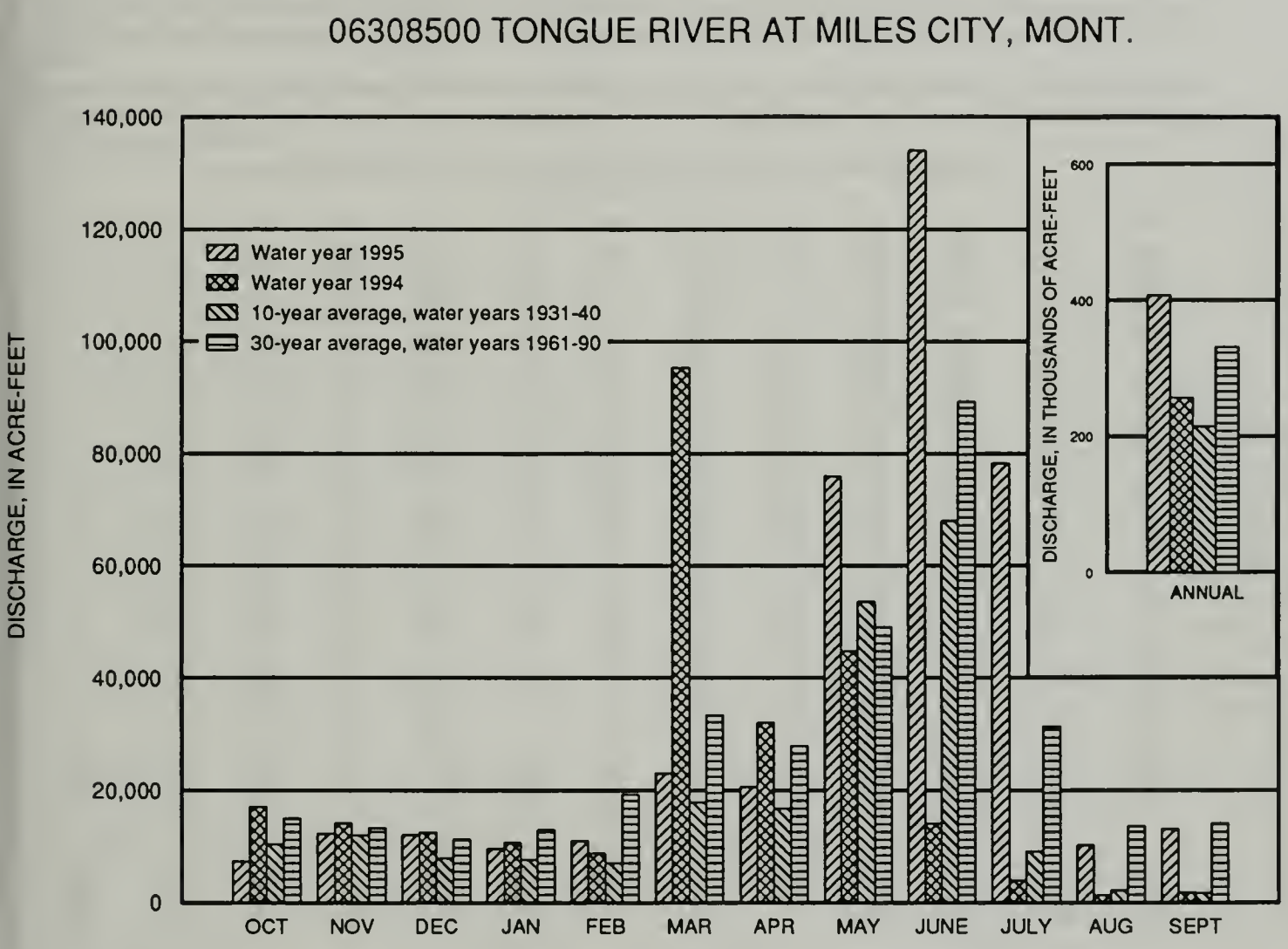


Figure 3. Comparison of discharge of the Tongue River during water year 1995 with discharge during water year 1994 and with 10-year and 30-year average discharges.

06326500 Powder River near Locate, Mont.

LOCATION.--Lat 46°25'48", long 105°18'34", in SW¼SW¼SE¼ sec. 23, T.8 N., R.51 E., Custer County, Hydrologic Unit 10090209, on left bank at downstream side of bridge on U.S. Highway 12, 0.1 mi west of Locate, and 25 mi east of Miles City, and at river mile 29.4.

DRAINAGE AREA.--13,189 mi^2.

PERIOD OF RECORD.--March 1938 to current year.

REVISED RECORDS.--WSP 926: 1939. WSP 1309: 1938-39 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,384.79 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to July 11, 1947, nonrecording gage at bridge 1.5 mi upstream, and July 11, 1947, to Sept. 30, 1965, water-stage recorder at site near upstream bridge at different datum. Oct. 1, 1965, to Oct. 4, 1966, nonrecording gage, and Oct. 5, 1966, to Mar. 21, 1978, water-stage recorder at present site and datum. Mar. 22, 1978, to Apr. 23, 1981, water-stage recorder 1.5 mi upstream at different datum. Apr. 24 to Aug. 20, 1981, water-stage recorder at present site and datum. Aug. 21, 1981, to Sept. 30, 1981, water-stage recorder 1.5 mi upstream at different datum. Oct. 1, 1981 to Apr. 5, 1995, water-stage recorder at site 1.5 miles downstream at different datum. Apr. 7, 1995 to present, water-stage recorders located on each bank and used depending on control conditions.

REMARKS.--Discharge records fair except those for estimated daily discharges, which are poor. Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft. Diversions for irrigation of about 101,800 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1994 TO SEPTEMBER 1995
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	559	e300	e150	e500	e400	496	391	2110	1890	472	186
2	66	547	e300	e150	e900	e250	472	418	2220	2120	399	145
3	66	534	e220	e120	e1700	e170	472	482	2190	1940	369	129
4	66	521	e100	e100	1530	e170	443	509	2190	1780	370	109
5	65	521	e50	e80	1070	e120	420	491	2430	1660	318	95
6	65	509	e30	e110	825	e120	397	540	3420	1620	296	81
7	164	496	e40	e110	759	e140	381	576	4060	1590	287	79
8	284	484	e50	e120	699	e190	370	534	4070	1530	270	75
9	177	472	e50	e150	669	e250	386	721	4340	1480	268	80
10	526	460	e45	e200	e420	e400	391	1760	4270	1390	246	83
11	1110	466	e45	e190	e300	e600	397	2550	4250	1370	238	84
12	938	460	e45	e170	e250	888	447	4980	4880	1380	229	96
13	773	466	e45	e150	e250	4250	501	9790	5480	1350	230	88
14	591	520	e45	e150	e250	3080	416	7210	4810	1230	205	79
15	485	515	e45	e150	e300	2170	408	4230	4160	1130	206	75
16	419	515	e50	e140	e350	1880	425	3350	4130	1100	194	66
17	402	502	e60	e130	e450	1540	425	3260	3900	1090	179	66
18	463	484	e100	e130	e600	1290	397	2920	4140	1020	160	67
19	571	e250	e140	e150	e700	1120	382	2430	4370	936	149	74
20	2700	e180	e200	e140	e800	980	373	2370	4250	891	e130	75
21	4950	e130	e250	e130	e1000	847	374	2480	3940	809	e120	72
22	3490	e100	e270	e140	e700	782	383	2430	3530	749	e115	86
23	1980	e40	e270	e140	550	721	395	2290	3160	753	113	98
24	1490	e70	e270	e140	546	669	384	2310	2840	716	109	103
25	1120	e70	e270	e150	534	600	402	2360	2640	883	129	120
26	955	e80	e270	e150	e1300	554	414	2290	2330	887	110	129
27	739	e90	e270	e150	e1000	515	391	2240	2150	774	99	153
28	677	e100	e270	e150	e500	508	361	2200	1930	691	88	178
29	620	e170	e250	e200	---	496	353	2220	1880	682	88	203
30	580	e250	e150	e250	---	502	371	2200	1880	614	79	255
31	547	---	e150	e300	---	502	---	2040	---	542	180	---
TOTAL	27145	10561	4650	4690	19452	26704	12227	74572	101950	36597	6445	3229
MEAN	876	352	150	151	695	861	408	2406	3398	1181	208	108
MAX	4950	559	300	300	1700	4250	501	9790	5480	2120	472	255
MIN	65	40	30	80	250	120	353	391	1880	542	79	66
AC-FT	53840	20950	9220	9300	38580	52970	24250	147900	202200	72590	12780	6400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1995, BY WATER YEAR (WY)

MEAN	247	210	147	138	432	1283	745	1163	1678	589	211	171
MAX	921	427	417	476	3850	4627	3062	5970	8045	2015	1096	898
(WY)	1941	1987	1942	1981	1943	1972	1965	1978	1944	1993	1941	1941
MIN	1.77	12.5	12.5	4.53	2.82	80.2	109	142	123	14.4	1.30	.19
(WY)	1961	1961	1961	1950	1950	1950	1961	1961	1966	1988	1988	1960

SUMMARY STATISTICS	FOR 1994 CALENDAR YEAR		FOR 1995 WATER YEAR		WATER YEARS 1939 - 1995	
ANNUAL TOTAL	224722		328222			
ANNUAL MEAN	616		899		584	
HIGHEST ANNUAL MEAN					1622	1944
LOWEST ANNUAL MEAN					79.4	1961
HIGHEST DAILY MEAN	18000	Mar 5	9790	May 13	26000	Feb 19 1943
LOWEST DAILY MEAN	25	Aug 6	30	Dec 6	.00	Jan 16 1950
ANNUAL SEVEN-DAY MINIMUM	29	Aug 3	44	Dec 6	.00	Jan 16 1950
INSTANTANEOUS PEAK FLOW			11000	May 13	31000	Feb 19 1943
INSTANTANEOUS PEAK STAGE			8.05	May 13	a12.20	Mar 16 1978
INSTANTANEOUS LOW FLOW					b.00	
ANNUAL RUNOFF (AC-FT)	445700		651000		423300	
10 PERCENT EXCEEDS	1210		2430		1370	
50 PERCENT EXCEEDS	200		418		233	
90 PERCENT EXCEEDS	41		81		40	

a--Backwater from ice.
b--On many days in 1950, 1960-61, and 1988.
e--Estimated.

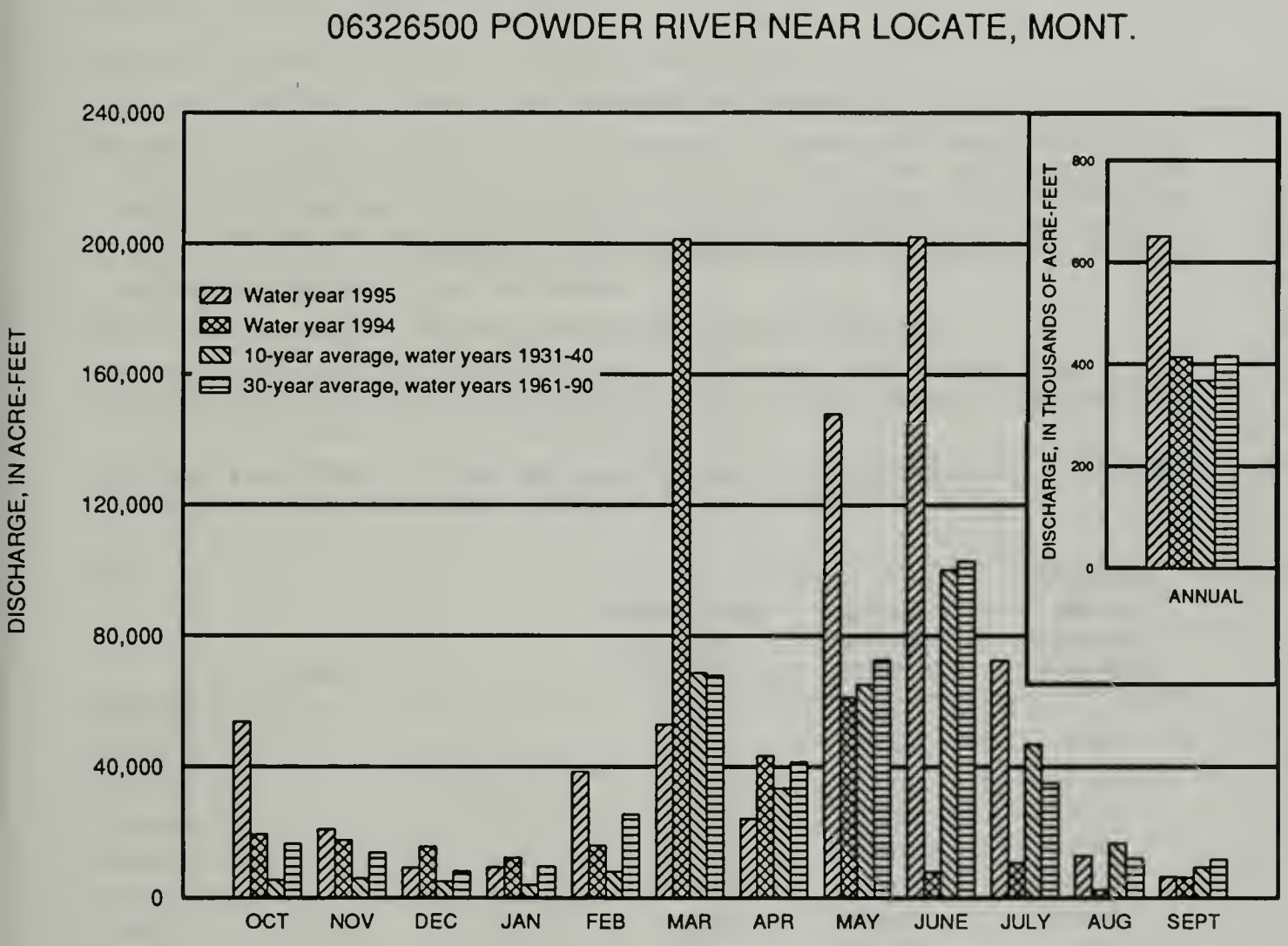


Figure 4. Comparison of discharge of the Powder River during water year 1995 with discharge during water year 1994 and with 10-year and 30-year average discharges.

MONTHLY SUMMARY OF CONTENTS FOR COMPACT RESERVOIRS COMPLETED AFTER JANUARY 1, 1950

06258900 Boysen Reservoir, Wyo.

LOCATION.--Lat 43°25'00", long 108°10'37", in NW1/4 NW1/4 sec. 16, T.5 N., R.6 E., Fremont County, Hydrologic Unit 10080005, at dam on Wind River and 13 mi north of Shoshoni, Wyoming.

DRAINAGE AREA.--7,700 mi^2.

PERIOD OF RECORD.--October 1951 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is feet above sea level (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by rock-fill dam completed in October 1951. Storage began Oct. 11, 1951. Usable capacity, 742,100 acre-ft between elevation 4,657.00 ft, invert of penstock pipe, and 4,725.00 ft, top of spillway gate. Dead storage, 59,880 acre-ft below elevation 4,657.00 ft. Prior to Jan. 1, 1966, usable capacity was 757,800 acre-ft and dead storage was 62,000 acre-ft at same elevations. Crest of dam is at elevation 4,758.00 ft. Figures given herein represent usable contents. Water used for irrigation, flood control, and power development.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 862,500 acre-ft, July 6, 7, 1967, elevation, 4,730.83 ft; minimum daily contents since normal use of water started, 191,900 acre-ft, Mar. 18, 19, 1956, elevation, 4,684.18 ft, capacity table then in use.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 802,400 acre-ft, July 15, elevation, 4,727.99 ft; minimum daily contents, 443,900 acre-ft, Oct. 2, elevation, 4,707.19 ft.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1994	4,707.21	444,200	---
October 31	4,708.03	455,900	+11,700
November 30	4,708.84	467,700	+11,800
December 31	4,709.09	471,400	+3,700
January 31, 1995	4,709.17	472,600	+1,200
February 28	4,710.93	498,800	+26,200
March 31	4,712.67	525,500	+26,700
April 30	4,712.62	524,800	-700
May 31	4,712.30	519,800	-5,000
June 30	4,725.23	746,700	+226,900
July 31	4,724.46	731,600	-15,100
August 31	4,720.31	654,100	-77,500
September 30, 1995	4,717.85	610,600	-43,500
1995 water year			+166,400

06260300 Anchor Reservoir, Wyo.

LOCATION.--Lat 43°39'50", long 108°49'27", in sec. 26, T.43 N., R.100 W., Hot Springs County, Hydrologic Unit 10080007, at dam on South Fork Owl Creek, 2 mi downstream from Middle Fork, 3 mi southeast of Anchor, and 32 mi west of Thermopolis.

DRAINAGE AREA.--131 mi^2.

PERIOD OF RECORD.--November 1960 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is feet above sea level (Bureau of Reclamation benchmark).

REMARKS.--Reservoir is formed by concrete arch dam completed in 1960. Usable capacity, 17,160 acre-ft between elevation 6,343.75 ft, invert of river outlet, and 6,441.00 ft, spillway crest, including 68 acre-ft below elevation 6,343.75 ft. Prior to Oct. 1, 1971, usable capacity was 17,280 acre-ft, including 149 acre-ft below the invert. Figures given herein represent usable contents. Water is used for irrigation of land in Owl Creek basin.

COOPERATION.--Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 9,250 acre-ft, July 4, 1967, elevation, 6,418.52 ft; no usable storage on many days some years.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 7,960 acre-ft, July 13, elevation, 6,414.30 ft; minimum daily contents, 34 acre-ft, Oct. 1 to Jan. 1, elevation, 6,340.00 ft.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1994	6,340.00	34	---
October 31	6,340.00	34	0
November 30	6,340.00	34	0
December 31	6,340.00	34	0
January 31, 1995	6,343.50	64	+30
February 28	6,346.00	91	+27
March 31	6,343.00	59	-32
April 30	6,343.00	59	0
May 31	6,372.40	1,080	+1,021
June 30	6,413.60	7,780	+6,700
July 31	6,410.20	6,530	-1,250
August 31	6,365.50	654	-5,876
September 30, 1995	6,350.50	159	-495
1995 water year			+125

06286400 Bighorn Lake near St. Xavier, Mont.

LOCATION.--Lat 45°18'27", long 107°57'26", in SW1/4 SE1/4 sec. 18, T.6 S., R.31 E., Big Horn County, Hydrologic Unit 10080010, in block 13 of Yellowtail Dam on Bighorn River, 1.3 mi upstream from Grapevine Creek, 15.5 mi southeast of St. Xavier, and at river mile 86.6.

DRAINAGE AREA.--19,626 mi^2.

PERIOD OF RECORD.--November 1965 to current year (monthend contents only). Prior to October 1969, published as "Yellowtail Reservoir."

GAGE.--Water-stage recorder in powerhouse control room. Datum of gage is feet above sea level (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by thin concrete-arch dam; construction began in 1961; completed in 1967. Storage began Nov. 3, 1965. Usable capacity, 1,312,000 acre-ft, revised, between elevation 3,296.50 ft, river outlet invert, and 3,657.00 ft, top of flood control. Elevation of spill-way crest, 3,593.00 ft. Normal maximum operating level, 1,097,000 acre-ft, elevation, 3,640.00 ft. Minimum operating level, 483,400 acre-ft, elevation 3,547.00 ft. Dead storage, 16,010 acre-ft below elevation 3,296.50 ft. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, and recreation.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 1,346,000 acre-ft, July 6, 1967, elevation, 3,656.43 ft; minimum daily contents since first filling, 641,900 acre-ft, Apr. 14, 1989, elevation, 3,583.30 ft.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 1,140,000 acre-ft, July 17, elevation, 3,646.30 ft; minimum daily contents, 775,600 acre-ft, Oct. 1, elevation, 3,608.13 ft.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1994	3,608.06	775,100	---
October 31	3,616.38	830,500	+55,400
November 30	3,617.96	842,100	+11,600
December 31	3,614.63	818,100	-24,000
January 31, 1995	3,610.87	792,800	-25,300
February 28	3,611.46	796,600	+3,800
March 31	3,611.61	798,000	+1,400
April 30	3,610.46	790,100	-7,900
May 31	3,613.43	810,000	+19,900
June 30	3,640.16	1,056,000	+246,000
July 31	3,641.37	1,072,000	+16,000
August 31	3,638.51	1,036,000	-36,000
September 30, 1995	3,636.72	1,014,000	-22,000
1995 water year			+238,900

MONTHLY SUMMARY OF CONTENTS FOR COMPACT RESERVOIRS EXISTING ON JANUARY 1, 1950

The extent, if any, of the use of reservoirs in this section which may be subject to Compact allocations was not determined. As a matter of hydrologic interest the monthend usable contents in acre-feet of four reservoirs are given. The first three reservoirs are in the Bighorn River basin, Wyoming, and data on contents were furnished by the Bureau of Reclamation. The Tongue River Reservoir in Montana is operated under the supervision of the Water Resources Division of the Montana Department of Natural Resources and Conservation, which furnished the water level data.

	Usable contents, in acre-feet			
Month	06224500 Bull Lake	Pilot Butte Reservoir	06281500 Buffalo Bill Reservoir	06307000 Tongue River Reservoir
September 30, 1994	42,940	7,760	209,100	14,490
October 31	47,670	27,970	212,500	21,630
November 30	49,190	27,790	224,100	22,960
December 31	49,920	27,280	231,600	23,100
January 31, 1995	50,090	27,200	233,900	19,560
February 28	50,110	27,110	240,300	28,400
March 31	50,450	26,920	253,200	33,080
April 30	51,980	29,580	240,700	31,140
May 31	63,610	26,500	290,300	27,060
June 30	138,100	26,510	542,200	59,110
July 31	147,900	25,730	642,000	49,170
August 31	126,700	15,950	580,400	33,780
September 30, 1995	104,300	11,730	525,200	23,470
Change in contents during water year	+61,360	+3,970	+316,100	+8,980

RULES AND REGULATIONS FOR ADMINISTRATION OF THE YELLOWSTONE RIVER COMPACT

A compact, known as the Yellowstone River Compact, between the States of Wyoming, Montana, and North Dakota, having become effective on October 30, 1951, upon approval of the Congress of the United States, which apportions the waters of certain interstate tributaries of the Yellowstone River which are available after the appropriative rights existing in the States of Wyoming and Montana on January 1, 1950 are supplied, and after appropriative rights to the use of necessary supplemental water are also supplied as specified in the Compact, is administered under the following rules and regulations subject to the provisions for amendment revision or abrogation as provided herein.

Article I. Collection of Water Records

A. It shall be the joint and equal responsibility of the members of the States of Wyoming and Montana to collect, cause to be collected, or otherwise furnish records of tributary streamflow at the points of measurement specified in Article V (B) of the Compact, or as near thereto as is physically or economically feasible or justified.

1. Clarks Fork

The gaging station known as Clarks Fork near Silesia, Montana and located in NW1/4 SE1/4 sec. 1, T. 4 S., R. 23 E., shall be the point of measurement for the Clarks Fork.

2. Bighorn River (exclusive of Little Bighorn River)

The gaging station known as the Bighorn River above Tullock Creek, near Bighorn, Montana, and located in SE1/4 SE1/4 NE1/4 sec. 3, T. 4 N., R. 34 E., shall temporarily be the designated point of measurement on that stream. The flow of the Little Bighorn River as measured at the gaging station near Hardin, Montana, and located in SE1/4 NE1/4 NE1/4 sec. 19, T. 1 S., R. 34 E., shall be considered the point of measurement for that stream, except that if or when satisfactory records are not available, the records for the nearest upstream station with practical corrections for intervening inflow or diversion shall be used.

3. Tongue River

The gaging station known as the Tongue River at Miles City, Montana, and located in NE1/4 NE1/4 SE1/4 sec. 23, T. 7 N., R. 47 E., shall temporarily be the point of measurement for that stream.

4. Powder River

The gaging station known as the Powder River near Locate, Montana, and located in NW1/4 SW1/4 sec. 14, T. 8 N., R. 51 E., shall temporarily be the designated point of measurement for that stream.

B. Records of total annual diversion in acre-feet above the points of measurement designated in the Compact for irrigation, municipal, and industrial uses developed after January 1, 1950, shall be furnished by the members of the Commission for their respective States, at such time as the Commission deems necessary for interstate administration as provided by the terms of the Compact. Providing that if it be acceptable to the Commission, reasonable estimates thereof may be substituted.

C. Annual records of the net change in storage in all reservoirs, not excluded under Article V (E) of the Compact, above the point of measurement specified in the Compact and completed after January 1, 1950, and the annual net change in reservoirs existing prior to January 1, 1950, which is used for irrigation, municipal, and industrial purposes developed after January 1, 1950, shall be the primary responsibility of the member of the Commission in whose State such works are located; providing such data are not furnished by Federal agencies under the provisions of Article III (D) of the Compact, or collected by the Commission.

Article II. Office and Officers

A. The office of the Commission shall be located at the office of the Chairman of the Commission.

B. The Chairman of the Commission shall be the Federal representative as provided in the Compact.

C. The Secretary of the Commission shall be as provided for in Article III of these rules.

D. The credentials of each member of the Commission shall be placed on file in the office of the Commission.

Article III. Secretary

A. The Commission, subject to the approval of the Director of the United States Geological Survey, shall enter into cooperative agreements with the U.S. Geological Survey for such engineering and clerical services as may reasonably be necessary for the administration of the Compact. Said agreements shall provide that the Geological Survey shall:

1. Maintain and operate gaging stations at or near the points of measurement specified in Article V (A) of the Compact.

2. Assemble factual information on stream flow, diversion, and reservoir storage for the preparation of an annual report to the Governors of the signatory States.

3. Make such investigations and reports as may be requested by the Commission in aid of its administration of the Compact.

B. The Geological Survey shall act as Secretary to the Commission.

Article IV. Budget

A. At the annual meeting of each even-numbered year or prior thereto, the Commission shall adopt a budget for operation during the ensuing biennium beginning July first. Such budget shall set forth the total cost of construction, maintenance and operation of gaging stations, the cost of engineering and clerical aid, and other necessary expenses excepting the salaries and personal expenses of the Commissioners. On odd-numbered years revisions of the budget shall be considered.

B. It shall be the obligation of the Commissioners of the States of Montana and Wyoming to endeavor to secure from the Legislature of their respective States sufficient funds with which to meet the obligations of this Compact, except insofar as provided by the Federal government.

Article V. Meetings

An annual meeting of the Commission shall be held each November at some mutually agreeable point in the Yellowstone River Basin for consideration of the annual report for the water year ending the preceding September 30th, and for the transaction of such other business consistent with its authority; provided that by unanimous consent of the Commission the date and place of the annual meeting may be changed. Other meetings as may be deemed necessary shall be held at a time and place set by mutual agreement, for the transaction of any business consistent with its authority.

No action of the Commission shall be effective until approval by the Commissioners for the States of Wyoming and Montana.

Article VI. Amendments, Revisions and Abrogations.

The Rules and Regulations of the Commission may be amended or revised by a unanimous vote at any meeting of the Commission.

Gary Fritz
Commissioner for Montana

George L. Christopulos
Commissioner for Wyoming

ATTESTED:

L. Grady Moore
Federal Representative

Adopted November 17, 1953
Amended December 16, 1986

RULES FOR ADJUDICATING WATER RIGHTS ON INTERSTATE DITCHES

Article I. Purpose

The purpose of this rule is to determine and adjudicate, in accordance with the laws of Montana and Wyoming, those pre-Compact (January 1, 1950) water rights diverting from the Powder, Tongue, Bighorn and Clarks Fork Rivers and their tributaries where the point of diversion is in one State and the place of use is in the other State which have not yet been adjudicated.

Article II. Authority

In accordance with the Yellowstone River Compact, the State of Montana and the State of Wyoming, being moved by consideration of interstate comity, desire to remove all causes of present and future controversy between the States and between persons in one State and persons in another State with respect to these interstate ditches. Article III (E) of the Compact provides the Yellowstone River Compact Commission with the authority "...to formulate rules and regulations and to perform any act which they may find necessary to carry out the provisions of this Compact...."

Article III. Definitions

The terms defined in the Yellowstone River Compact apply as well as the following definitions:

1. "Acre-feet" means the volume of water that would cover 1 acre of land to a depth of 1 foot.

2. "Cfs" means a flow of water equivalent to a volume of 1 cubic foot that passes a point in 1 second of time and is equal to 40 miners inches in Montana.

3. "Interstate Ditches" shall include ditches and canals which convey waters of the Bighorn, Tongue, Powder, and Clarks Fork Rivers and their tributaries across the Wyoming-Montana State line where the water is diverted in one State and the place of use is in the other State.

4. "Department of Natural Resources and Conservation," hereafter called the "Department," means the administrative agency and Department of the Executive Branch of the Government of Montana created under Title II, Chapter 15, MCA which has the responsibility for water administration in that State.

5. "Water Court" means a Montana District Court presided over by a water judge, as provided for in Title III, Chapter 7, MCA.

6. "State Engineer" shall be the current holder of the position created by the Wyoming Constitution as Chief Water Administration Official for the State of Wyoming.

7. "Board of Control," hereinafter called the "Board," is defined as the constitutionally created water management agency in Wyoming composed of the four Water Division Superintendents and the State Engineer.

8. "Superintendent" is the member of the Board who is the water administration official for the Water Division where the interstate ditch is located. (The two Water Divisions in the Yellowstone River drainage are Water Division Numbers Two and Three.)

9. "Date of Priority" shall mean the earliest date of actual beneficial use of water, unless evidence and circumstances pertaining to a particular claim establish an earlier date.

10. "Point of Diversion" is defined to be the legal land description by legal subdivision, section, township, and range of the location of the diversion structure for an interstate ditch from a natural stream channel.

11. "Place of Use" is defined to be the legal land description (legal subdivision, section, township, and range) of the lands irrigated by an interstate ditch.

12. "Person" is defined as an individual, a partnership, a corporation, a municipality or any other legal entity, public or private.

13. "Claimant" is defined as any person claiming the use of water from an interstate ditch as herein defined.

Article IV. Procedures

The procedures for determining and adjudicating water rights associated with interstate ditches shall be categorized as follows: (A) Where the point of diversion is in Wyoming and place of use in Montana, and (B) Where the point of diversion is in Montana and place of use in Wyoming.

A. Wyoming Procedure

1. The Yellowstone River Compact Commission will provide a claim form to be completed by the claimant that will describe the location and point of diversion and land being irrigated, the priority date claimed, method of irrigation and such other information required to describe the claim. (A sample form for this purpose is attached.)

2. The Yellowstone River Compact Commission will send the claim form to water users on the interstate ditches.

3. Water users will complete the claim form and file it with the Yellowstone Compact Commission, which, when found to be correct and complete, will be forwarded to the Board for verification.

4. Upon receipt of the form, the Board shall forward it to the appropriate Superintendent, who, in cooperation with the Department, will validate the information including the use that has been made of the water, the number of acres and location of lands being irrigated, the priority date, and all other relevant information. The Superintendent and the Department will utilize aerial photography and other information to have prepared a reproducible map showing the location of the ditch system, lands irrigated, point of diversion, etc., of the claim.

5. After the validation procedure, the Superintendent will hold a hearing, after appropriate notice and advertisement, at which time the claimant shall describe, in detail, the use that has been made of the water and the lands that are being irrigated, establish a priority date, etc. Costs incurred in advertising shall be paid by the claimant. If a single hearing is held to consider several claims, the costs of advertising shall be shared equally among the claimants. Anyone who opposes the claim shall appear and state the reasons, if any, for opposition to the claim. If there is no opposition to the claim, cost incurred in holding the hearing shall be paid by the claimant. If protestants do appear and oppose the claim, hearing costs will be paid 50 percent by the claimant and 50 percent by the protestant, or if there is more than one protestant, the remaining 50 percent shall be shared equally among the protestants.

6. At the conclusion of the hearing, the Superintendent shall forward the record to the Yellowstone River Compact Commission with his findings and recommendations. The Yellowstone River Compact Commission will make the

determination of the amount of the right, the location, and the priority date, and then send the record to the Board.

7. The Board shall review the record and integrate it into its water rights system. Upon entry of the record by the Board, the information shall be forwarded to the Department and the Chairman of the Yellowstone River Compact Commission.

8. Upon the entry of the right into the Board's records, it will have the following attributes:

   a. The right will be a Wyoming water right with a priority date as established by this procedure.

   b. The amount of the right will be determined as provided by Wyoming law.

B. Montana Procedure

1. The Yellowstone River Compact Commission will provide a claim form to be completed by the claimant that will describe the location and point of diversion and land being irrigated, the priority date claimed, method of irrigation and such other information required to describe the claim.

2. The Commission will send the claim form to water users on the interstate ditches.

3. Water users will complete the claim form and file it with the Yellowstone River Compact Commission, which, when found to be correct and complete, will be forwarded to the Department for verification.

4. Upon receipt of the form, the Department, in cooperation with the Wyoming State Engineer's Office, will validate the information, including the use that has been made of the water, the number of acres and location of lands being irrigated, the priority date, and all other relevant information. The appropriate Superintendent and the Department will utilize aerial photographs and other information to have prepared a reproducible map showing the location of the ditch system, land irrigated, point of diversion, etc., of the claim.

5. The Department will then forward the record to the Yellowstone River Compact Commission with its findings and recommendations. Upon approval by the Commission, the record shall be submitted to the Montana Water Court for adjudication. A duplicate record will be forwarded to the Wyoming State Engineer's Office, the Board, and the Chairman of the Yellowstone River Compact Commission upon adjudication.

6. Upon adjudication of the right by the Montana Water Court, it will have the following attributes:

   a) The right will be a Montana water right with a priority date as established by this procedure.

   b) The amount of the right will be determined as provided by Montana law.

Article V. Exclusions

A. These rules recognize the limitation in Article VI of the Yellowstone River Compact regarding Indian water rights.

B. These rules shall not be construed to determine or interpret the rights of the States of Wyoming and Montana to the waters of the Little Bighorn River.

Article VI. Claim Form Submission Period

All claims must be submitted to the Yellowstone River Compact Commission, c/o District Chief, United States Geological Survey, 821 E. Interstate, Bismarck, ND 58501, within 90 calendar days after the claimant has received the claim form from the Commission. The blank claim form will be sent certified mail to the water user and the submission period of 90 calendar days will begin with the next day following receipt of the form, as evidenced by the certified mail receipt card. For good cause shown in writing, an extension of time beyond the 90 days for submittal may be obtained from the Commission.

YELLOWSTONE RIVER COMPACT COMMISSION

WYOMING

GORDON W. FASSETT
STATE ENGINEER
HERSCHLER BUILDING
4TH FLOOR EAST
CHEYENNE, WYOMING 82002
(307) 777-7354

UNITED STATES

WILLIAM F. HORAK
CHAIRMAN
U.S. GEOLOGICAL SURVEY
821 E. INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58501
(701) 250-4601

MONTANA

GARY FRITZ
ADMINISTRATOR, WATER RESOURCES DIVISION
DEPT. OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE
HELENA, MONTANA 59620
(406) 444-6603

YELLOWSTONE RIVER COMPACT COMMISSION

CLAIM FORM FOR INTERSTATE DITCHES

1. Name of ditch or canal: _____

2. Source of water supply: _____

   Tributary of _____

3. Name of claimant: _____

   Address _____

   City _____ State _____Zip Code _____

   Home Phone No. _____ Business Phone No. _____

4. Person completing form: _____

   Address _____

   City _____ State _____Zip Code _____

   Home Phone No. _____ Business Phone No. _____

5. Method of irrigation: _____

6. Point of diversion: County _____ State _____

   Headgate located in the ___¼ ___¼, Section ____, T.___R.____

   (a) Description of headgate: (Briefly describe the materials and general features, date constructed or last known work, general condition.) _____

   _____

   _____

(b) Describe water measuring device: _____

_____

_____

(c) If the point of diversion is in Montana:

1. What flow rate has been claimed?

_____ ☐ cubic feet per second

☐ gallons per minute

☐ miner's inches

2. What volume of water has been claimed?

_____ acre-feet

7. Dimensions of ditch at headgate: Width at top (at waterline) _____ feet; width at bottom _____ feet; side slopes (vertical:horizontal) _____:_____; depth of water _____ feet; grade _____ feet per mile.

8. Place of use and acres irrigated: County_____ State ____ Give legal subdivisions of land owned by you on which water is being used (acres claimed): An example field is shown in the first line.

T.	R.	SEC.	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	MW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
58N	95W	18			25.1											10.2			35.3

9. Describe any additional uses of water claimed from the ditch: _____

10. Date of first beneficial use of water (priority date) on lands described above for _____ Ditch is_____ (mo/day/yr) and shall be the same for all lands claimed on this form.

11. Has irrigation water been diverted onto all lands shown in the above tabulation each year since completion of works?__ If not, state exceptions and reasons therefore: _____

_____

_____

12. Attach documentary evidence or affidavits showing your ownership or control of the above lands, as well as the historic use of water on these lands. _____

_____

_____

13. What permit or claim numbers have been assigned to known records filed with either the Wyoming State Engineer's Office or the Montana Department (DNRC) for irrigating the above lands? _____

_____

_____

14. Have personnel in the Wyoming State Engineer's Office or the Montana Department (DNRC) been contacted to obtain the information given in No. 13? ( ) Yes ( ) No

15. Describe any flumes or pipelines in the ditch conveyance system:_____

_____

_____

16. Describe ordinary annual period of use: _____ to _____
(mo/day) (mo/day)

_____.

17. Attach copies of aerial photographs, U. S. Geological Survey maps or other such documents showing the ditch and lands irrigated that give evidence to this claim and may be useful to the Commission.

* * * * * * * * * * *

State of _____)
) SS
State of _____)

I, _____, having been duly sworn, depose and say that I, being of legal age and being the claimant of this claim for a water right, and the person whose name is signed to it as the claimant, know the contents of this claim and the matters and things stated there are correct.

_____

_____

Subscribed and sworn before me, this ____day of _____, 19__.

_____
Notary Public

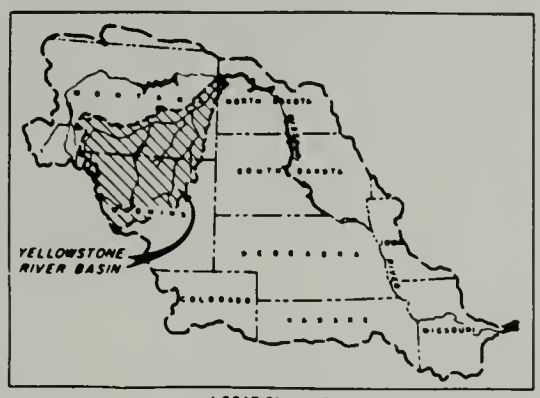
Residing at: _____

My commission expires: _____

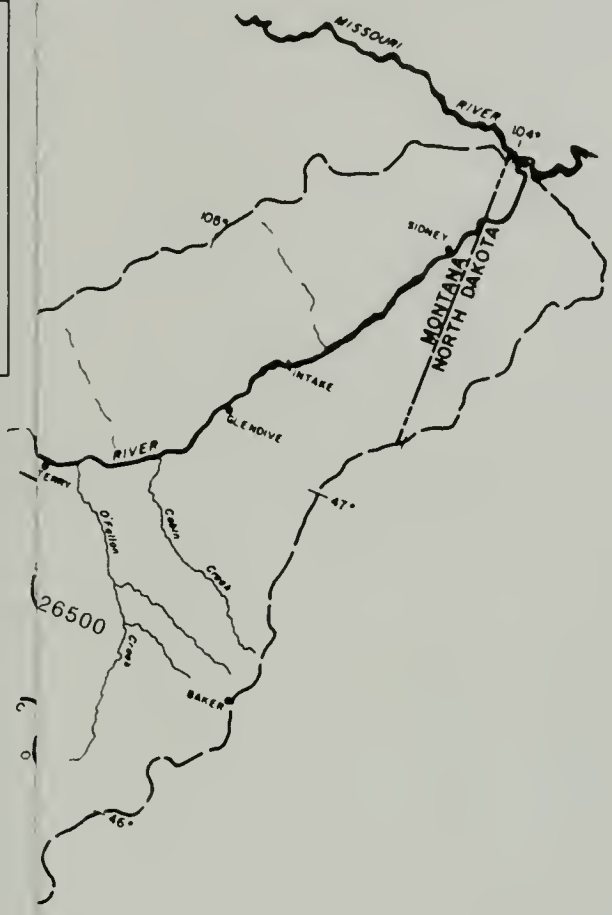
CONVERSION TABLE

Multiply inch-pound units	By	To obtain SI units
	Length	
feet (ft)	0.3048	meters (m)
miles (mi)	1.609	kilometers (km)
	Area	
acres	4,047	square meters (m^2)
	0.4047	*hectares (ha)
	0.4047	square hectometer (hm^2)
	0.004047	square kilometers (km^2)
square miles (mi^2)	2.590	square kilometers (km^2)
	Volume	
cfs-day or second-foot day (ft^3/s-day)	2,447	cubic meters (m^3)
	0.002447	cubic hectometers (hm^3)
cubic feet	0.02832	cubic meters
acre-feet (acre-ft)	1,233	cubic meters (m^3)
	0.001233	cubic hectometers (hm^3)
	0.000001233	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	28.32	liters per second (L/s)
	28.32	cubic decimeters per second (dm^3/s)
	0.02832	cubic meters per second (m^3/s)
acre-feet per year (acre-ft/yr)	1,233	cubic meters per year (m^3/yr)
	0.001233	cubic hectometers per year (hm^3/yr)
	0.000001233	cubic kilometers per year (km^3/yr)

*The unit hectare is approved for use with the International System (SI) for a limited time. See National Bureau of Standards Special Bulletin 330, p. 12, 1977 edition.



LOCATION MAP



YELLOWSTONE RIVER COMPACT COMMISSION

YELLOWSTONE RIVER BASIN

EXPLANATION

▲ COMPACT STREAMFLOW-GAGING STATION

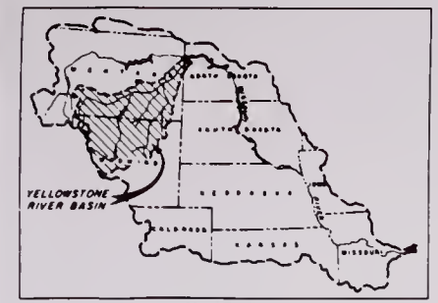
▮ RESERVOIR-CONTENT STATION

06307000 STATION NUMBER

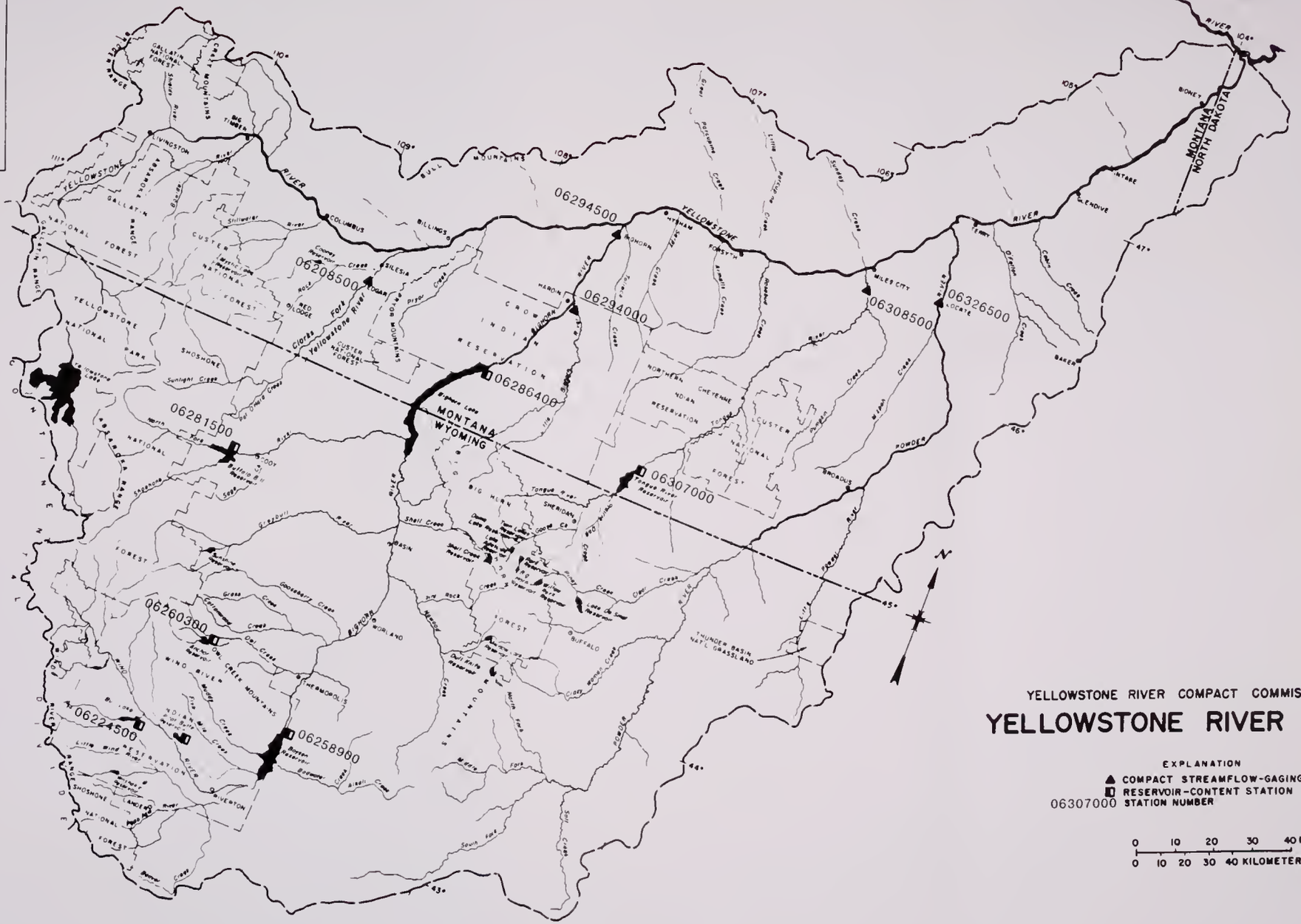
0 10 20 30 40 MILES

0 10 20 30 40 KILOMETERS

MAP SHOWI



LOCATION MAP



YELLOWSTONE RIVER COMPACT COMMISSION

YELLOWSTONE RIVER BASIN

EXPLANATION

▲ COMPACT STREAMFLOW-GAGING STATION

▮ RESERVOIR-CONTENT STATION

06307000 STATION NUMBER

0 10 20 30 40 MILES

0 10 20 30 40 KILOMETERS

MAP SHOWING LOCATIONS OF COMPACT STREAMFLOW-GAGING AND RESERVOIR-CONTENT STATIONS